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Graduate students' research-based learning experiences in an online Master of Education program

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Graduate students' research-based learning experiences in an online Master of Education program

Abstract

The purpose of this research was to better understand graduate students' learning experiences in a research-intensive, online Master of Education (MEd) program. In alignment with the program goal for graduate scholars of the profession, this course-based program adopted an inquiry-based signature pedagogy grounded in the innovative practice of research-based learning. As part of this study, we explored broader program structures, including the cohort-based model, course sequencing and research ethics approval processes, which situate the research-based learning experiences. Several research questions framed our investigation into the experiences of online students who are engaged in a research-active MEd program. Analysis of survey and focus group information contributes to this mixed-methods case study and provides insights into implications for research-based learning in online course-based graduate programs.

Keywords

Research-based learning, graduate education, case study, online Master of Education degree

Introduction

Professional master's and doctoral degrees are a growth area in graduate programs in education globally. Over the past century, the steady increase in our understanding of learning, teaching and leadership from an expanded educational research base has been matched by an increase in the diverse competencies needed by those who aim to become outstanding educators (Willis, Inman & Valenti 2010). School leadership requirements grew from teaching experience plus bachelor's degree to a master's degree. School and jurisdiction leaders increasingly return to the university to earn a professional doctorate with the goal of leading scholarship in professional practice. Willis, Inman and Valenti (2010) indicate the pattern of increased professional degree requirements reflects both the growth and maturation of the educational research base, as well as the expansion of competencies needed by the profession to address the complex learning problems, needs and contexts involved in education.

Online and blended professional graduate programs in educational psychology and educational research are offered at the University of Calgary's Werklund School of Education (WSE). Master's and doctoral programs are intentionally designed as cohort-based learning experiences that emphasise field-based, practitioner-led research to inform innovation and change in practice. Based on the University of Calgary's quality assurance principles and guidelines (University of Calgary 2015), the WSE undertook a curriculum review (CR) of all course-based professional graduate programs in 2014-2015. The program-wide CR yielded rich insights on current program strengths and areas calling for ongoing improvement (Lock, Jacobsen & Brandon 2015). Actions arising from the CR inform ongoing development, redesign and research efforts by academic faculty to continually respond to and improve students' engagement and learning experiences. This paper presents outcomes of a case study on CR.

The authors sought to understand engaged and inspired learning and the use of signature pedagogies (Shulman 2005; 2007) in practitioner-oriented, professional graduate programs. Signature pedagogies, such as inquiry and problem-based learning, are discipline-focused approaches to teaching and learning that intentionally support students in cultivating habits of being, or dispositions towards inquiry in the field (Shulman 2005; 2007). Our school is committed to fostering signature pedagogies across our various undergraduate and graduate programs, including case-based, inquiry-based, problem-based, collaborative and cognitive apprenticeship approaches to learning in and for the profession. In the development and sequencing of four required research courses in our Master of Education (MEd) programs, we have enacted research-based learning (RBL) (Willison & O'Regan 2006/2018; see the first article in this issue; Willison & Buisman-Pijlman 2016) as an approach to cultivating scholars of the profession: educational leaders who draw upon and contribute to research in the implementation and assessment of changes in education (Walker et al. 2008).

What these signature pedagogies have in common is that students are presented with a challenge and then learning is scaffolded in graduated ways with what they need to know and do in order to address that challenge. In particular, through the four research courses required for completing a course-based MEd degree at the WSE (Figure 1), students learn about educational research and program evaluation, design and conduct a research study that can involve human participants, report on the outcomes of the research, and prepare a manuscript for publication or presentation based on findings from their research, in order to develop competence as graduates.

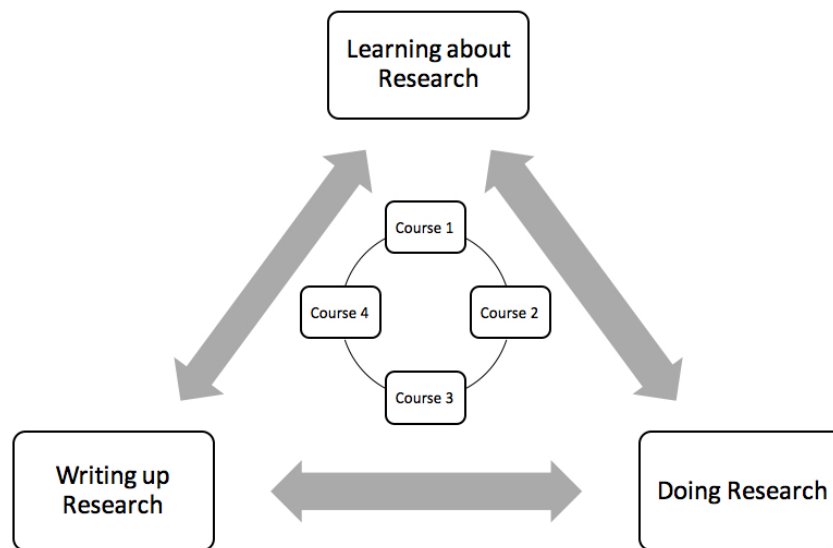


Figure 1. A descriptive model showing how the WSE teaches educational research across four required research courses (from Jacobsen, Eaton, Brown, Simmons & McDermott 2018).

Graduate Competencies

Competencies are an “interrelated set of attitudes, skills and knowledge that are drawn upon and applied to a particular context for successful learning and living, [and] are developed over time” (Alberta Education 2015, p. 3). The graduate competencies used by WSE in program development (Lock, Jacobsen & Brandon 2015) were adapted from the Council of Ministers of Education's (2007) Ministerial Statement on Quality Assurance of Degree Education in Canada. Graduate courses and programs are structured around competencies that inform the design of rigorous and relevant learning experiences. The nine competencies that inform design of WSE graduate programs align and cohere with the facets of research in the Research Skills Development (RSD) framework (Willison 2014; Table 1). The four research courses required to complete the MEd align with the practice of RBL whereby students move along a continuum of learning and increased autonomy in educational research supported by “research-oriented-teaching” (Griffiths 2004). Students develop professional competencies (Table 1) while working online and in cohorts (Hurst, Cleveland-Innes & Hawranik 2013).

Table 1. Graduate competencies mapped to RSD framework facets of research.

Werklund School of Education Nine Graduate Competencies	Six Facets of Research (Willison 2014)
1. Foster understanding of a substantial body of knowledge at the forefront of the academic discipline 2. Acquire interdisciplinary academic competencies	1. Embark on inquiry and so determine a need for knowledge/understanding
3. Develop knowledge of educational research methodologies and practices 4. Recognise the contributions of other interpretations, methods and disciplines 5. Engage in the application of knowledge	2. Find/generate needed information/data using appropriate methodology 3. Critically evaluate information/data and the process to find/generate them
6. Foster an increased awareness of the limits of knowledge 7. Engage in an interdisciplinary community of scholars	4. Organise information collected/generated 5. Synthesise/analyse new knowledge
8. Develop communications for the mobilization of knowledge 9. Foster professional capacity and autonomy	6. Communicate knowledge and understanding and the processes used to generate them

Master of Education Program Description

MEd students are guided in carrying out applied or field research on problems of practice they identify. In analyzing our student body and the current state of the profession, WSE created two distinct pathways: 1) MEd Specialist route, and 2) MEd Interdisciplinary route, both of which provide students with a systematic understanding of knowledge, a critical awareness of current problems and/or new insights at the forefront of their academic discipline and area of professional practice. The MEd Specialist is a two-year program with 12 half-courses (36 credits), eight specialization and four research courses, within one field of study. The MEd Interdisciplinary program consists of 12 half-courses (36 credits) completed in three steps: graduate certificate (four specialised courses), graduate diploma (four specialised courses) and MEd Research (four required research courses) (Jacobsen, Eaton, Brown, Simmons & McDermott 2018).

MEd students work online in cohorts, which is a characteristic feature of our program guided by literature on communities of practice, participatory knowledge building and signature pedagogies (Lave & Wenger 2000; Scardamalia & Bereiter 2006; Shulman 2005). The cohort, an intact group of students who take a set or all courses in a program together, is integral to the design and teaching of our professional graduate degrees. The cohort design assumes students start and end at the same time, and progress through a coherent and intentionally designed and structured program of study in which each course builds on previous coursework. The cohort enables graduate students to engage in sustained academic and practitioner-scholar dialogues within a learning community that develops over time. Our program's commitment to cohort-based learning builds upon research that demonstrates how belonging to a community of learners improves student experience and outcomes in professional graduate programs (Anderson 2003; Garrison, Anderson & Archer 2000; Rourke & Anderson 2002; Scardamalia 2002).

The cohort is particularly crucial in the online learning experience within which developing community and a sense of belonging can be challenging for different learners (Simmons, Parchoma, Jacobsen, Nelson & Bhola 2016). Courses in our MEd are designed with a combination of synchronous and asynchronous learning experiences. In synchronous components, the entire class meets in an online environment at the same time utilizing a combination of audio and visual technology (such as sharing a computer screen and powerpoint presentation). In conjunction with regular synchronous sessions, courses are designed with the flexibility of asynchronous discussions and learning tasks in which students and instructors communicate within a learning management system any time during each week of a course. An asynchronous design allows students to engage online at times convenient to them, read cohort members' contributions and add to conversations based on their entry point into the online space. Asynchronous learning components allow students to stay connected throughout the week, while scheduled synchronous sessions allow for enhanced interaction and immediate engagement with each others' ideas or concerns throughout the learning process.

Our MEd offers a course-based, research-active program designed to enhance the knowledge and understanding of professionals already engaged in education practice. All students, in both the MEd Interdisciplinary and MEd Specialist routes, are required to complete a common set of four research courses and produce a capstone research project. MEd students are involved in reviewing and critiquing research on education; synthesizing and evaluating research at the forefront of the discipline; bringing forth diverse expertise and experience from practice; and engaging in individual and group work to consider and apply research in practice. Willis et al. (2010) argue that educators need even more sophisticated knowledge and expanded competencies to address the complex problems faced in education. Our MEd students are engaged in conversations about reflexivity and praxis, such as how research can (and should) inform practice and how practice can (and should) inform research. Instructors and students engage in dialogue about the relevance of RSD for educators as scholars of the profession, and reflect on how research enables educators to identify, study and address complex problems of practice, and ultimately, to improve learning opportunities and learning systems for all learners, including teachers and school leaders.

Evaluating the Alignment of Four Research Courses with the RSD Framework

The first of four required MEd research courses emphasises understanding of the continuum of educational research methodologies to inform decisions about types of research questions to be asked and the sort(s) of insights and answers particular methods can provide. This first course focuses on various issues, methods, and techniques in educational research, and dilemmas that frame the context for contemporary qualitative and quantitative research, as well as preliminary consideration of research strategies to assist students in selecting research questions, methods, and strategies for further study. Research ethics issues and processes are a key topic, as well as the application process for ethical approval for research. Outcomes include a research plan for field-based inquiry, and for those who plan to collect data with human participants, an ethics application. This course aligns with the RSD framework (Willison & O'Regan 2006/2018; Willison 2014; Willison, Sabir & Thomas 2017) in that it engages students to *embark & clarify, find & generate, evaluate & reflect*. Some students in our course-based graduate programs may not understand the need for RSD (Wilmore & Willison 2016) at the start of the program; practitioners tend to focus on problems of practice with the goal of improving practice.

A significant innovation and signature pedagogy in our MEd is the second course, the collaboratory of practice. Collaborative laboratories of practice (collaboratories; Shulman 2007) are contexts in which theory and practice inform each other. The collaboratory is a structured,

scaffolded and socially connected reflective learning experience within complex, messy, real-world practices that serve as sources of active inquiry, critical thought and action, and participatory research. Collaboratories are designed to leverage the strengths of a diverse student cohort that brings experience in a range of educational contexts, interdisciplinary expertise and practices to their investigations of problems facing schools, organizations and other institutions. Students take an inquiry stance, wherein issues are examined by reviewing theoretical and research literature within an analytical framework. The emphasis is on RBL as students move through the collaboratory, with a clear expectation that they will develop and evaluate informed solutions to complex problems of practice. The studio or “collaborative laboratory” learning design facilitates students’ application of knowledge in real-world settings and writing a research report on their study. Within the RSD framework, students in this course iteratively engage in, *find & generate, evaluate & reflect, organise & manage, and analyse & synthesise* research activities.

The third course is on writing educational research, and examining and developing skills associated with crafting an academic paper from study findings. In their writing, students build on a clearly-defined topic or idea, situate the topic in the current literature, and support their argument with a well-structured discussion. As in many other MEd courses, students engage in writing, revising and incorporating feedback through cycles of peer review. Students are provided with support from instructors and cohort peers as they craft and publish their written work. As a course outcome, students are expected to publish or present a research manuscript. In alignment with the RSD framework, students *evaluate & reflect* on their research findings, *analyse & synthesise* data to inform knowledge claims and findings, and build competency in *communicating & applying* insights from their research.

The fourth course focuses on program and practice evaluation. Students are supported in understanding evaluation as a discipline, as a profession, and as a process in a wide range of educational and social contexts. This course focuses on evaluation rather than the assessment of individuals, and on developing understanding of the logic of evaluative thinking, the nature of evaluation as a discipline, the knowledge and skills needed to be expert consumers of program evaluation and novice evaluators in contexts relevant to individual career contexts. Students collaboratively apply central concepts in program evaluation to actual programs. An outcome is a program evaluation proposal and report. Competencies that students develop align with the following RSD facets of research: *embark & clarify, find & generate, and evaluate & reflect*.

Research Design

This case study is part of the ongoing effort to monitor the quality of research-based learning experiences in the MEd program, with an emphasis on the four required research courses in particular. Our research is based on outcomes of a program-wide curriculum review (Lock, Jacobsen & Brandon 2015). This study focused on students’ perspectives and experiences to better understand the impact of program design for RBL, the role of communities of practice for both students and instructors (Lave & Wenger 1991; Willison & O’Regan 2006/2018), and to inform further improvements in the program. The research responds to Willison’s (2014) recommendation that the RSD framework be evaluated in numerous disciplinary and interdisciplinary contexts at master’s and PhD levels.

Research Questions and Objectives

The aim of this mixed methods research was to determine how master's students experience the research-based learning (RBL) components of their course-based graduate degree. Secondary research questions included: What structures best support students' learning during the research courses? In what ways are students supported in developing plans and carrying out research? In what ways do ethics application and approval processes support students in developing as scholars of the profession? What barriers or constraints limit students' learning during the research courses? Willison and O'Regan (2006/2018) provide the RSD framework for researchers interested in studying student learning of educational research skills. The study reports on structures of the program in relation to the signature pedagogy of RBL, and students' experiences of RBL through the RSD framework (Willison & O'Regan 2006/2018). In relation to the nine graduate competencies in the Werklund School of Education (Table 1), the RSD framework elucidates six facets of the research process as mediated through variant levels of autonomy (Willison 2014). Drawing on the work of scholars interested in developing students' research competencies, our study engaged the RSD framework to guide the design of a survey instrument and data collection via interviews, as well as provide a structure for our analysis and interpretation of data (Willison 2012; 2014; Wilmore & Willison 2016).

Methods

For this investigation, we used an explanatory case study approach (Creswell 2012; Merriam 2009; Stake 2005; Yin 2009) framed within our ongoing action research that has documented student learning and program improvements (Jacobsen, Eaton, Brown, Simmons & McDermott 2018; Brown, Dressler, Eaton & Jacobsen 2015). We adopted mixed methods of data collection, including surveys, interviews, focus groups and document analysis. Case study is an in-depth exploration of a bounded system (Creswell 2009; 2012); in the present study, the system includes the research activity and processes used within our MEd programs as units of analysis. This phase of the research recruited recent MEd graduates as participants in the research; the team received ethical approval from the University of Calgary's Conjoint Faculties Research Ethics Board and collected data in 2017 and 2018.

Participants were recent graduates who had completed their programs during the preceding academic year. MEd graduates were invited to participate in two distinct and sequential phases of the study (Creswell & Plano Clark 2011). For phase one, we surveyed recent graduates of the MEd; in phase two, we conducted interviews or focus groups. The survey was comprised of five select response and four open ended survey questions. Respondents used a four-point likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (4) for all select response items. In the appendix we provide four of the multi-part survey questions. All survey participants were invited to take part in phase two. Four participants took part in an interview or focus group, which was audio-recorded and transcribed for analysis.

Quantitative data from select response survey items was summarised using descriptive statistics. Qualitative data from interviews and open-ended survey items were analysed using an iterative process of review and first and second cycles of coding by two members of the research team (Miles, Huberman & Saldana 2014). A second round of data analysis triangulated findings from all sources to report insights and themes using the RSD framework in order to situate graduates' RBL experiences, as well as to evaluate and report on degrees of student autonomy (Willison & O'Regan 2006/2018; Willison 2014). Overall, the trustworthiness of findings was enhanced through the multiple sources of data that were collected, analysed and synthesised to identify

relationships and to generate an in-depth understanding of students' research experience in the MEd program. An analysis of the four research courses aligned with the RSD framework is provided in the next section.

Results

The survey was sent to 131 recent graduates. Graduates of the MEd Interdisciplinary (n=10) and MEd Specialist programs (n=6) completed the survey (n=16), a response rate of 12%. Most respondents had developed a capstone project that did not require ethics approval (63%), while the remainder conducted an inquiry requiring either course-based ethics approval or full ethics approval by the institutional research ethics board (37%). In Tables 2, 3, 4 and 5 we present descriptive data for multi-part survey questions. Table 2 displays students' perceptions regarding the extent to which different signature pedagogies supported them in learning/thinking about educational research.

Table 2. Signature pedagogies that support students' learning/thinking about research (n=16).

	Mean (M)	Standard Deviation
Collaboratories of Practice	3.38	0.86
Inquiry-Based Learning	2.80	0.91
Problem-Based Learning	2.73	0.85
Technology-Enabled Learning	2.69	1.14
Case-Based Teaching	2.36	0.81

Students self-reported that several signature pedagogies were supportive of learning and thinking about research, with $M > 2.5$ for four of the items. A majority of graduates (88%) agreed or strongly agreed that collaboratories of practice supported their learning/thinking about educational research ($M=3.38$).

Table 3 displays results for signature pedagogies that students perceived as supportive in terms of engagement in and doing educational research. Again, a majority (88%) agreed or strongly agreed that collaboratories of practice supported their engagement in and doing of educational research ($M=3.31$).

Table 3. Signature pedagogies that support students' engagement in and doing research (n=16).

	Mean (M)	Standard Deviation
Collaboratories of Practice	3.31	0.68
Problem-Based Learning	3.00	0.76
Inquiry-Based Learning	2.93	0.68
Technology-Enabled Learning	2.77	0.97
Case-Based Teaching	2.38	0.84

Table 4 displays students' perceptions about the extent to which different learning tasks supported learning about educational research. A majority of respondents agreed or strongly agreed (94%) that tasks that allowed for group work (or collaborative work) were supportive of their learning about educational research ($M=3.31$). Other tasks reported as being supportive of learning about research included: accessing readings (media sources) ($M=3.25$), asynchronous discussions ($M=3.07$), preparing an article critique ($M=3.07$), and posting in discussion forums ($M=3.0$).

Students perceived less support provided through the online ethics tutorial ($M=2.79$), synchronous sessions ($M=2.69$), instructor-created videos/presentations ($M=2.69$), and social media ($M=2.57$). More than half of respondents selected ‘not applicable’ for tasks, such as writing a blog post (56%) and guest speakers (69%), which suggests that these learning activities were not common in all courses.

Table 4. Learning tasks supporting students’ learning/thinking about educational research ($n=16$).

	Mean (M)	Standard Deviation
Group Work	3.31	0.77
Readings	3.25	0.66
Asynchronous Discussion Forums	3.07	0.77
Article/Literature Critique	3.07	0.93
Posting Responses in Discussion Forum	3.00	0.87
Online Ethics Tutorial	2.79	1.01
Synchronous Sessions	2.69	1.04
Instructor Videos/Presentations	2.69	0.82
Social Media Posts	2.57	1.18
Guest Speakers	1.80	0.75

Specific research learning tasks also supported students with their engagement in educational research. The majority of respondents agreed or strongly agreed (94%) that preparing a research proposal (including an ethics application for those conducting research with participants) was the most supportive learning task for engagement in educational research ($M=3.63$). A majority of respondents (86%) also reported that preparing a research report was an engaging learning task ($M=3.56$). Students reported that the least engaging learning task was preparing a presentation about educational research ($M=2.73$).

Table 5 displays survey results related to the perceived support of structures and processes in relation to students’ learning about educational research. Most graduates agreed (94%) that the cohort structure supported students’ learning and thinking about educational research ($M=3.44$). Other structures that were perceived as supportive included: the assignments, final capstone project, readings and learning materials and formative assessment activities, and interaction in online spaces. More than half of respondents agreed or strongly agreed (69%) that the four research course structure supported their learning and thinking about educational research ($M=3.0$) and the balance of theory and practice was well-placed within the four research courses ($M=2.94$). Similarly, two-thirds (63%) of respondents agreed or strongly agreed that the coherence of the pathway from design, to field-based inquiry, to a final written report was supportive of their learning ($M=2.88$).

Table 5. Structures and processes supporting students' learning about educational research (n=16).

	Mean (M)	Standard Deviation
Cohort structure	3.44	0.61
Assignments in research courses	3.38	0.60
Capstone project	3.25	0.83
Readings and learning materials	3.25	0.66
Formative assessment	3.25	0.66
Online spaces	3.06	0.75
Ethics approval process	3.00	0.74
Four-research course structure	3.00	1.06
Balance of theory and practice within research courses	2.94	0.75
Research courses provided a coherent pathway	2.88	0.93

Overall, survey respondents indicated that collaboratory of practice approaches were most supportive of the students' experiences of learning about and engaging in educational research. Students indicated that they valued working within a peer cohort. Group and collaborative work was a preferred approach to learning in research courses. Preparing a research proposal and research report were perceived as supportive and engaging research-learning tasks.

We conducted two interviews and one online focus group. Two participants were involved in the focus group and two participants were interviewed individually. Participants in the interviews and focus group elaborated on their learning when responding to the following two questions: 'In what ways has the research experience informed your professional practice?' 'How have you taken the key learning from the research into your professional role?' Students reported that the credibility of the WSE MEd opened up excellent leadership opportunities and diverse career options for them. We also asked students to describe any highlights of their learning experience. Reliable technology supports and collaborative learning were key resources for students, particularly in first year. Choice was important to students, such as having options for online, face-to-face and asynchronous access. Students wanted to do research as part of their MEd and welcomed the possibility of publishing in key journals. Respondents recalled the ethics application process as a marked learning moment in which they felt supported by peers, professors and members of the external review board. Embedding the MEd program in topics of interest, which were simultaneously situated within work experiences of students, also proved to be effective for research-based learning.

Findings Viewed Through the RSD Framework

Interpreting findings using the RSD framework, we found students engaged in their MEd program with a high degree of autonomy and responded to questions by drawing upon rich experiences reflective of the autonomy they experienced in the context of the arrangement and choice of courses. The findings suggest that students developed the capacity to organise data using self-determined structures and processes, as well as the capacity to synthesise and analyse information to fill self-identified gaps and extend knowledge. This quote provided by one of the survey respondents in the open-ended comment field at the end of the survey illustrates how a student connected enhanced competencies with the research skills they developed:

This MEd experience was life changing in many ways! I secured a fulltime teaching contract; I have become more analytical in my review of materials and articles, I have become more articulate in oral and written discourse... I am very proud of myself!
[Survey Respondent]

Drawing from the RSD framework, we observed that student participants, though open to a range of movement in terms of autonomy, also required a high degree of structure and guidance (level 1); that is, students needed support in using the language of the discipline (Program Evaluation) to extend their knowledge and understanding for a range of audiences (level 5). In the words of one student:

Now in my workplace, I can start looking at the programming we're doing and use the program evaluation knowledge that I've gained....not just to inform our programming, but then to present at conferences and publishing work. [Interview Participant]

The RSD framework provided a means to document that early in the RBL process, students required more support with fixed determining structures, connections, and guidelines for engagement. Identifying terms of engagement involved designing organised ways to communicate the recommended structure, criteria and processes for students. The RSD framework provided insight to us as designers into the need to offer diverse perspectives on educational research. We recalled that with action research in the MEd Interdisciplinary research courses, students were working in diverse settings beyond formal education, such as in financial institutions and health settings. In the Program and Practice Evaluation course, students from contexts outside of schools found ways to connect educational research to their work. Study participants questioned the sequencing of the courses and recommended the four research courses be ordered differently. We are considering a different way to order the courses to better support student engagement in research: Program and Practice Evaluation first in summer, then Research Methodology in Education in Fall with the ethics application, followed by Collaboratory of Practice in Winter and Writing Educational Research in Spring. We are also committed to offering only the four-semester option given feedback that the RBL process as experienced was too rushed when offered over three semesters instead of four. One graduate stated:

The course I gained the most from was Program and Practice Evaluation. It also felt the most disconnected from the other three research courses - i.e. the other three felt like a sequential process, but Program Evaluation was not part of that sequence. I found Program Evaluation to be the most broadly applicable, focused, and with the most hands on experience of any of the courses I took in my program. I could easily see how to apply these skills in my own workplace. [Survey Respondent]

Using the RSD framework, we delineated how students demonstrated the capacity to evaluate the RBL process rigorously using self-generated criteria based on experience during the ethics application route.

Because I went through the ethics process...I was in on a meeting where they [school district personnel] ...talked through the issues of the ethics application and their ethics approval. I totally was comfortable. I completely understood what they were getting at – the use of technology together surveyed from students. So, I was really 100% prepared for this. [Focus Group Participant]

In our analysis, we determined that students researched at the level of open inquiry with specific self-determining guidelines as contextualised within professional practices. All of the students, whether they select an independent inquiry, a course-based research project or independent research requiring ethics clearance, engage in this level of self-determined, open inquiry:

I would like to see more practical applications for the use of research in my own practice. Engaging in discussions or watching videos where real work situations involving the use of research in leadership are shown and discussed. Applicability helps me take ownership and interest on the research topic. [Survey Respondent]

Students expressed gratitude for the quality of instruction experienced in the program:

I would like to express my gratitude to the best instructor in this MEd program, for her profound knowledge, professionalism, patience, and amazing personal qualities. [Survey Respondent]

In the writing research course, student feedback indicated that the predetermined criteria were aligned with the RSD framework, 'communicate knowledge and understanding and the processes used to generate them'. We gained greater insight regarding the role of American Psychological Association (APA) citation and referencing style as part of scholarly, academic writing expectations in the graduate program. We realise the need to better articulate reasons for having this expectation, to address why instructors provide formative feedback in this area, and also to include APA style as part of the criteria in rubrics and evaluation criteria.

Our understanding regarding the arrangement of research courses was honed through use of the RSD framework. We realise the need to clarify how and why courses are organised in a particular sequence within the program, given that students sought direction early (why, what and when they were doing courses). We became cognizant of the importance of starting the preparation-discussion for the research stage earlier, and at the same time, to ensure connectedness within each stage of the graduate program, as well as continuity (in terms of publishing after the program), we thought directional conversations ought to be interwoven throughout the courses.

Discussion

Using Willison's (2014) RSD framework to analyse and interpret the design of the four research courses, we have observed that students are well-supported in a graduated and progressive manner towards more autonomy, through bounded researching (first and fourth courses), scaffolded researching (first and fourth courses), and open-ended and unbounded researching (second and third courses). According to Lave and Wenger (1991), learning is "configured through the process of [the learner] becoming a full participant in a socio-cultural practice" (p. 29). Through the cohort

structure, students do engage in a community of practice as research-active practitioners. It has been shown with the RBL approach that not only do students learn research skills and dispositions, but “there were some additional benefits, notably productive collaboration between researchers and lecturers, between lecturers and students, and between students and students” (Willison & O’Regan 2007, p. 404). Each of these collaborations provided opportunities for more impactful “knowledge production at the research-teaching nexus” (Griffiths 2004, p. 709) as well as questions of community and belonging at the university level to improve students’ and faculty members’ quality of life in post-secondary institutions. As these possibilities began to emerge in a previous study (Jacobsen, Eaton, Brown, Simmons & McDermott 2018), we correctly anticipated that this explanatory case study would deepen our understandings of the complexities and processes of RBL as experienced by students who have completed the MEd program.

In response to our questions around the structures that best support students’ learning, collaboratory approaches to research-based learning were identified by graduate students as most supportive of their learning and engagement in educational research. Students valued working through the MEd program with a cohort and preferred group work (or collaborative work) during their research courses. A range of learning activities were experienced as supportive, engaging and meaningful RBL tasks. Graduates noted how the program allowed for compatibility with study and work, as well as the integration of knowledge acquired through professional capacity; both integral in the overarching goals of RBL. Others spoke about how studio groups helped to amplify interactive and collaborative components of the program, and how the program was embedded in topics of interest as situated within professional practice. Choice was important for students. Through the collaborative approach during ethics applications, to collaborative work, to preparing a publishable manuscript, students noted how they experienced the educational research process and the many particularities involved in research. The explicit focus on institutional ethics review processes (whether or not students pursued a formal ethics application or not), was found to support students in developing as scholars of the profession. Graduates felt well-supported by peers, instructors and coordinators while conceptualizing and conducting research and preparing the report.

Graduates also shared some concerns, which provide insight and direction for ongoing course and program redesign, and call for more study to improve research-based learning. Some synchronous learning activities were not experienced as engaging; instead, respondents highlighted the importance of knowledge dissemination as an area for growth. Some students struggled with inquiry-based learning and recommended a more fixed structure and format earlier in the program. This tension reminded us of the importance of having clarity for instructors in the certificate and diploma steps of the MEd on the pre-requisites for success in the final research step of the degree, and addressing questions of accessibility to the program. Finally, we need to address inquiry explicitly throughout the program given the diverse backgrounds and different degrees that students bring upon entry to the MEd program.

The four research courses in our MEd and the coherence of the RBL experience emerged as a possible area for growth, and we recommend continuing with the strong balance of theory and practice to increase the interconnectedness with the sequencing of courses. One program goal is to increase the proportion of students who elect to conduct individual research projects requiring an ethics application and approval. More time and preparation between courses is needed for the ethics application and preparing the research proposal. More work can be done through research-based teaching and instructional design to amplify the role of literature review within a research proposal for better coherence and understanding. We also need to be mindful of the cumulative workload, such as number of readings and difficulty of readings in conjunction with students’ time

spent in professional practice. Future preparatory possibilities for discussing the research courses within the program emerged from this research, such as organizing an event (e.g., alumni sharing, meet the instructor) during which graduates can return to share their experiences in the program, as well as ideas on how to arrange one's schedule and budget time. So, while the focus of this case study was on recent students' experiences in the MEd program, it is particularly interesting that students recommend including opportunities to learn from those who previously graduated from the program. Enacting this recommendation may help us to expand the possibilities of RBL for cultivating a community of scholars of the profession in graduate programs.

Summary and Conclusions

Willison and O'Regan (2006/2018) argue that research and the development of research skills are both products and processes of a university education, and involve undergraduate students in learning how to research within a specific discipline, and that research-based teaching supports students in conducting their own research. The results of our study make a significant contribution to the research literature on RBL and the RSD framework in two ways. First, we have focused on research-based teaching and learning designs that support graduate students in learning how to conduct educational research on problems of practice, as well as the collaborative research-based teaching that supports students in carrying out their capstone research projects (Jacobsen, Eaton, Brown, Simmons & McDermott 2018; Brown, Dressler, Eaton & Jacobsen 2015). Thus, our findings contribute a response to Willison's (2014) recommendation to use the RSD framework as an evaluative lens in graduate education. Second, we offer an empirical case study of how to support graduate students' RBL in fully online learning environments. We acknowledge the limitations of the small sample size in this case study. Building on this case study, we plan to refine the instruments and continue to explore graduate student online experiences with RBL as grounded in the RSD framework (Willison & O'Regan 2006/2018; 2017; Willison 2014). Continuing to explore Master of Education students' experiences with RBL will help to determine and refine the supports needed to improve students' experiences with and outcomes from practice-focused research activities (including ethics application supports) and improve the coherence of students' experience of the online MEd research courses.

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Appendix **Survey Questions: Student Experience in a Research-Active Program**

<p>A. To what extent did signature pedagogies support your learning/thinking about educational research in your degree? (Responses displayed in Table 2)</p>
<ul style="list-style-type: none"> • Inquiry-based learning • Problem-based learning • Case-based teaching • Technology-enabled learning • Collaboratories of Practice • Other
<p>B. To what extent did signature pedagogies support your engagement in and doing educational research? (Responses displayed in Table 3)</p>
<ul style="list-style-type: none"> • Inquiry-based learning • Problem-based learning • Case-based teaching • Technology-enabled learning • Collaboratories of Practice • Other
<p>C. To what extent did the following learning tasks/assessment activities support your learning about educational research? (Responses displayed in Table 4)</p>
<ul style="list-style-type: none"> • Synchronous sessions • Asynchronous discussions/sessions • Guest speaker(s) • Instructor-created videos/presentations • Group work (or collaborative work) • Readings (includes media sources) • Preparing an article • The CORE tutorial supported my learning about engaging in educational research. • Posting and responding to discussion board posts • Writing a blog (or other social media) post
<p>D. To what extent did the following structures support your learning/thinking about educational research: (Responses displayed in Table 5)</p>
<ul style="list-style-type: none"> • The cohort structure in the MEd program supported student-student relationships to develop in a professional learning and research community. • The final research project enabled students to be research informed, and research-active scholars of the profession. • The assignments in the research courses were relevant, engaging, and challenging in developing understanding about educational research. • The balance of theory and practice was well-paced within the four research courses (i.e. well thought learning activities and assigned readings; courses addressed issues that are

immediately relevant to students' personal context and important to the fields of education).

- The research courses provided a coherent pathway from research design, to field-based inquiry, to a final written report.
- Instructors provided high quality readings and learning materials to support learning during the research courses.
- The ethics application and approval process was clear for students undertaking research with human participants.
- The four research courses support learners in becoming research-active practitioners.
- Formative assessment from instructors and peers during the research courses provided ongoing feedback that helps students to move forward in their learning and research.
- Online spaces (D2L, Adobe Connect, Email, other online spaces) are designed to foster thoughtful, reflective dialogue and communications about research issues and topics.